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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,051	01/28/2004	Malte Kumkar	15540-020US1 / 25 216 RK/	9616
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EXAMINER VAN ROY, TOD THOMAS				
ART UNIT 2828		PAPER NUMBER		
MAIL DATE 03/25/2008		DELIVERY MODE PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/765,051

Applicant(s)

KUMKAR ET AL.

Examiner

TOD T. VAN ROY

Art Unit

2828

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,8,9,11-15 is/are rejected.
- 7) ☒ Claim(s) 3,5-7 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB06)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____
- 7) ☐ Paper No(s)/Mail Date 10/09/2007

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 12/27/2007 have been fully considered but they are not persuasive.

The Applicant has argued: *Taniu does not teach a surface for diffusively scattering and spatially homogenizing light that is spaced away from a solid body.*

The Examiner agrees that Taniu does not teach a surface for diffusively scattering and spatially homogenizing light, but Taniu was not relied upon to teach this feature. Taniu was only relied upon to teach a spaced apart reflector.

Taniu teaches away from the diffusive pumping of Tidwell by teaching having the pump light concentrated along the optical axis center.

The Examiner agrees that Taniu teaches the light to be along the optical axis center, but does not feel that this teaches away from Tidwell. Taniu's main concern is to couple light into the gain medium. This is done by multiple reflections from a spaced apart reflector which returns the pumping light to the side surface of the gain medium. Taniu further teaches this to follow the center of the optical axis, and to utilize the entire side surface for input (col.2 lines 34-68, col.8 lines 58-66). Effectively Taniu is dispersing the pump light evenly along the optical axis by way of the entire side surface. This even spreading is similar to Tidwell's even distribution via use of a diffusive scattering surface.

Taniu teaches away from the diffusive pumping of Tidwell by teaching having the pump light not directly entering the end of the gain medium.

The Examiner admits that it is not entirely clear that the input pump light is entering through the gain element's end surface. The Examiner is of the belief that this is a moot point as Taniu is not relied upon to teach this feature, and is combined with Tidwell as a means to return escaped pump light to the medium. As can be seen in fig.1 of Taniu, pump light that has entered then exited the gain material is once again returned after reflection from the spaced apart reflector. This is the reason for combination with Tidwell.

The reasons for rejecting claims 8 and 9 have largely been addressed above.

The Examiner refers back to the previous office action for a discussion of why Ireland is believed to be relevant in the rejection of claims 11 and 12. The Examiner further points out that Ireland was not used to teach a certain reflector type, but was used for teaching a water cooling method.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

Art Unit: 2828

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 4 and 13-15 are rejected under 35 U.S.C. 103(a) as being anticipated by Tidwell (WO 93/23899, applicant submitted art) in view of Taniu et al. (US 5373527).

With respect to claims 1, 2 and 4, Tidwell teaches an apparatus for optically pumping a laser-active solid body with pumping light coupled into the solid body through only an end surface of the solid body (fig.1), the apparatus comprising: a laser-active solid body (fig.1 #4) including an end surface through which pumping light is coupled into the solid body (fig.1 #4 left side) and a lateral surface through which pumping light reflects from the solid body (fig.1 #4, top and bottom lateral surfaces to coating); a reflector surrounding the laser-active solid body at a distance from the lateral surface of the solid body for reflecting light that exists the solid body back towards the solid body (pg.5 lines 1-14, coating), and that the surface is diffusive. Tidwell does not teach a reflector to be spaced from the solid body to form an annular gap. Taniu teaches a pumped solid state medium wherein a reflective surface (smooth, mirror like, fig.2) is spaced from the solid state body (fig.1) forming a gap. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the solid state medium of Tidwell with the spaced apart reflective surface of Taniu in order to allow for any escaped pumping light to be returned to the gain medium (see Remarks, 07/25/2007, pg.6 para.1, wherein the Applicant admits Tidwell's side surface does allow some light to escape).

With respect to claims 13-15, Tidwell and Taniu teach the apparatus including all of the limitations in claim 1, but do not teach the amount of light which is diffused. It would have been obvious to one of ordinary skill in the art at the time of the invention to choose the amount of diffused light to be 3, 20, or 40 percent as it has been found to be not inventive to discover the optimum, or working, range by routine experimentation (see MPEP 2144.05 II A - In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)).

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tidwell in view of Taniu and Honea et al. (US 2002/0118718).

With respect to claim 8, Tidwell and Taniu teach the apparatus as described in the rejection to claim 1, including a medium disposed on the outside of the lateral surface (Tidwell, pg.4 lines 28-30), but do not teach the medium to be of a higher refractive index. Honea teaches a solid state pumping apparatus that uses a medium of high refractive index ([0006]). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Tidwell and Taniu with the index difference of Honea in order to suppress parasitic oscillations in the active media (Honea, [0006]).

With respect to claim 9, Tidwell, Taniu and Honea teach the apparatus as outlined in the rejection to claim 8, and Tidwell further teaches the medium to be disposed in the form of a layer on the lateral surface (fig.1).

Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tidwell in view of Taniu and Ireland (US 5048044).

With respect to claims 11-12, Tidwell and Taniu teach the device outlined in the rejection to claim 1, but do not teach the gap to be used for allowing cooling via water passage. Ireland teaches a spaced apart reflector (fig.13) and teaches the gap to be used for water cooling (Ireland, col.6 lines 56-60, col.4 lines 35-37). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system of Tidwell and Taniu with the cooling of Ireland in order to lower the temperature of the gain medium and prevent problems with focusing due to temperature induced refractive index variations.

Allowable Subject Matter

Claims 3, 5-7, and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 3, 5 and 10 are believed to be allowable as the prior art failed to teach the separated reflector to be of the diffusive type.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TOD T. VAN ROY whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2828

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/TVR/

/Minsun Harvey/
Supervisory Patent Examiner, Art Unit 2828